

DOCKETED

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Paired Power Comment Letter on MDHD BEV DER Charging - CEC 19-ERDD-01

Additional submitted attachment is included below.



January 10, 2020
California Energy Commission
Docket Unit, MS-4
Re: Docket No. 19-ERDD-01
1516 Ninth Street
Sacramento, CA 95814

**Re: Docket No. 19-ERDD-01 – Research Idea Exchange
Paired Power, Inc. Response to Grant Funding Opportunity (GFO) Concept on DER
Strategies for MDHD BEV Charging Infrastructure**

Paired Power, Inc. is a 100% solar EV charging infrastructure provider, and delivers a critical solution to the overall EV charging infrastructure ecosystem. Our patented SEVO SunStation™ is a solar carport canopy that is used as a DC power source to charge battery electric vehicles (BEVs) exclusively from on-site solar. Paired Power's technology bypasses many of the challenging capital, operating, and other grid infrastructure soft costs required for current grid EV chargers. SEVO SunStation™ provides highly scalable, on-site solar power systems for multiple use cases. As our team has over 6 GW of designed and installed solar and energy storage project experience, we are committed to transportation electrification with 100% renewable energy.

Paired Power appreciates that the California Energy Commission (Commission) staff has recognized distributed energy resources (DERs) as a critical solution for charging medium and heavy-duty (MDHD) battery electric vehicles. The integration of DERs onsite can optimize charging strategies for many different target use-cases and eliminate greenhouse gas emissions (GHG) and associated air pollutants, which potentially can reduce 43.2 MMT of CO₂ per day of California's transportation GHG emissions and accelerate the state's goal (SB 100) of 100% renewable electricity by 2045.^{1,2}

Paired Power respectfully submits the following comments and recommendations to the Commission staff in regards to questions posted in Docket 19-ERDD-01 and topic "DER Strategies for MDHD BEV Charging Infrastructure":

- 1. Of the candidate use-cases and vehicle types listed above, which ones should we prioritize in this solicitation and why?**

¹ p.12, <https://ww3.arb.ca.gov/regact/2013/hdghg2013/hdghg2013isor.pdf>

² <https://www.latimes.com/business/la-fi-100-percent-clean-energy-20190110-story.html>

There are many commercial EV charging applications in which onsite DERs can be used to charge MDHD vehicles. Transit buses, airport shuttle buses, school buses, and off-road agricultural work vehicles are all excellent use cases to prioritize for this solicitation.

Under new California regulations (CARB's Innovative Clean Transit Regulation and Zero-Emission Airport Shuttle Regulation), public transit agencies have a mandate to fully convert to zero-emission bus (ZEB) fleets by 2040 and to all 13 major California airports by 2035. Given these California state regulations and the high on-site power needs for ZEB charging applications, there will be in many cases distribution capacity constraints that will impede the deployment of the charging infrastructure necessary for these use-cases. Therefore, fleet operators will need to better understand the economic and environmental value and other co-benefits from charging with onsite DERs versus utility grid charging.

In addition, school buses are a great use-case given their short and fixed travel routes, and long dwell times in school parking lots during peak solar hours; and therefore, they can take greater advantage of onsite DERs. Paired Power believes school sites would greatly benefit, and potentially require resiliency capabilities if located in areas at risk of utility Public Safety Power Shutoffs (PSPS) or otherwise face interrupted service for MDHD BEV charging. Finally, off-road agricultural work vehicles, such as electric tractors and electric construction vehicles, are an excellent use case for this solicitation. About a quarter of state agricultural operators have installed onsite DERs to help decarbonize their farm operations, and with the advent of off-road electric tractors and construction vehicles, will reduce operational costs, runoff and local air pollution related issues. The reliability and resiliency benefits would be valuable for all use-cases listed above, as the sites often provide ancillary services as community centers, emergency shelters and transportation providers during public disaster relief/evacuation events.

For all use-cases listed above, the ZEV vehicles, DER integrated EV chargers, and software are available today to run demonstration pilots. The solicitation can measure the economic impacts of these use-cases in order to offer important insights on the market opportunity of MDHD BEV electrification for a particular transportation sector. Commission staff should seek to prioritize use-cases that can test these applications, and ensure that onsite DERs, MDHD BEV charging, and resiliency are all key criteria in future grant-funded projects as there are no current funding programs focused exclusively for on-site DER integration as it pertains to the above use-cases.

2. What is the best way to characterize the grid impacts and other costs associated with deploying MDHD BEV charging infrastructure without a managed charging/DER strategy?

As listed in the solicitation by the Commission, Paired Power agrees with the following metrics under consideration:

- Itemized balance of system costs considering both site host installation costs and utility costs,
- Carbon intensity,
- Cost of delays associated with upgrading upstream distribution systems/substations,
- Risks associated with long-term investments in permanent upgrades.

In addition to the metrics identified above, Paired Power recommends tracking the following metrics within the scope of a defined project:

- Levelized avoided costs (LACE) with on-site DERs integration solutions
- Levelized cost of energy (LCOE) with on-site renewable electricity generation and grid DERs
- Infrastructure deployment timelines and costs
- Distribution network upgrade timelines and costs
- Net benefit values (when providing charging services during an outage)

Paired Power defers judgement to the Commission on the selection of relevant methodologies and available tools to calculate defined metrics above. (Note: when using LACE and LCOE together, the result will provide a more intuitive indication of economic competitiveness for each technology than either metric separately when several technologies are able to meet load.)

3. How does the target technology need to improve?

The target technology exists today with Paired Power's microgrid capabilities to support on-site MDHD BEV charging and meet critical loads. Our microgrid controller is capable of collecting and storing renewable electricity during the day and discharging into the MDHD BEVs at night. Our unique electrical architecture reduces immediate needs to upgrade electrical grid infrastructure, by incorporating on-site solar that can either supplement or replace the grid. Demonstration projects under this solicitation can showcase innovative solutions and revenue generation opportunities to key implementation challenges for MDHD BEV charging with existing grid resource and non-wired DER systems.

4. What level of investment would be needed from EPIC to make a meaningful difference on this issue?

Paired Power recommends at least 50% matching funds should be covered by EPIC to cover DER equipment costs (including EV charging stations) in order to appropriately incentivize site host participation. Paired Power further recommends a 1 MW project size with at least two charging ports to support at least two MDHD BEVs to provide meaningful data on system efficacy to support this area of interest by the Commission.

Paired Power appreciates the opportunity to provide feedback to the Commission on the initial GFO concepts for utilizing EPIC funds to demonstrate DERs integration with MDHD BEV charging infrastructure. We look forward to continuing to work with the Commission staff and other stakeholders to enhance the proposal prior to this grant opportunity announcement. This upcoming GFO reflects a desirable investment in DERs related MDHD BEV charging technologies that sets a clear pathway for California to meet its 100% renewable energy goals by 2045.

If you should have any questions regarding our comments, please contact us at (650) 701-7247 or via email at tom.mccalmont@pairedpower.com.

Sincerely,

Paired Power, Inc.



D.T. McCalmont, CEO